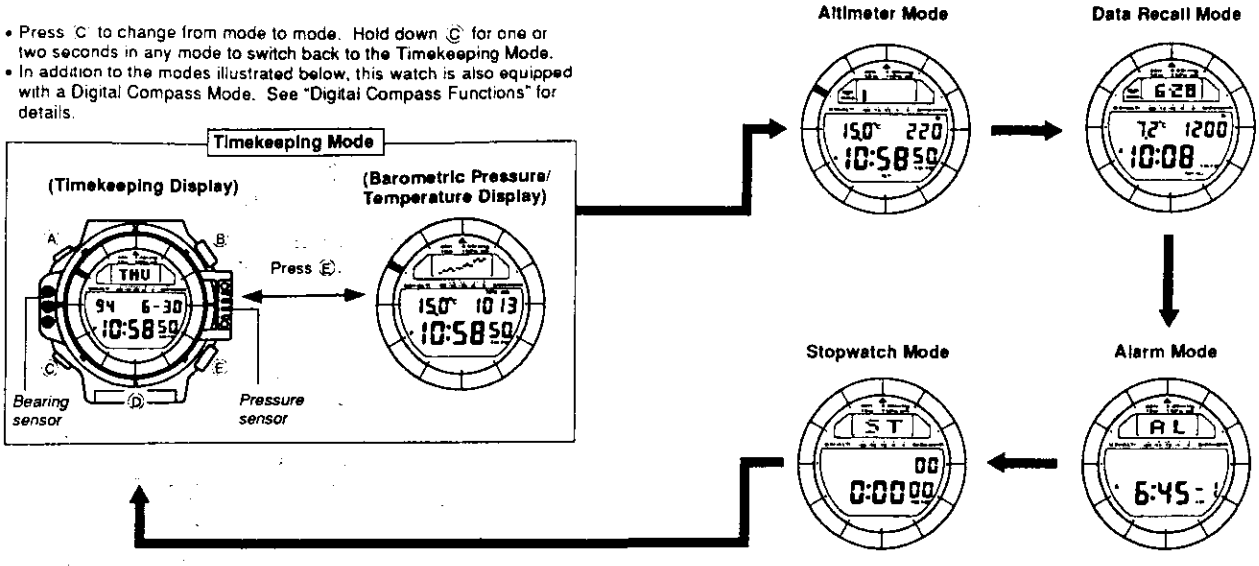
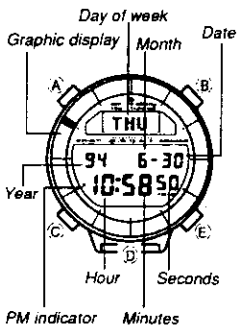
OPERATION CHART: QW-1170

GENERAL GUIDE

- Press Ⓒ to change from mode to mode. Hold down Ⓒ for one or two seconds in any mode to switch back to the Timekeeping Mode.
- In addition to the modes illustrated below, this watch is also equipped with a Digital Compass Mode. See "Digital Compass Functions" for details.



TIMEKEEPING FUNCTIONS

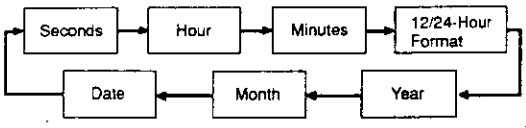


You can set the time and date in the Timekeeping Mode, which you can enter using Ⓒ.

- In the Timekeeping Mode, hold down Ⓑ to illuminate the display.
- In the Timekeeping Mode, the graphic display shows counting of the seconds.

To set the time and date

1. In the Timekeeping Mode, press Ⓔ until the Timekeeping Display appears.
2. Hold down Ⓐ until the seconds digits start to flash on the display. The seconds digits flash because they are *selected*.
3. Press Ⓒ to change the selection in the following sequence.



4. While the seconds digits are selected (flashing), press Ⓔ to reset the seconds to "00". If you press Ⓔ while the seconds count is in the range of 30 to 59, it is reset to "00" and 1 is added to the minutes. If the seconds count is in the range of 00 to 29, the minutes count is unchanged.
5. While any other digits (besides seconds) are selected (flashing), press Ⓔ to increase the number or Ⓑ to decrease it. Holding down either button changes the current selection at high speed. While the 12/24-hour setting is selected, press Ⓑ or Ⓔ to switch between the two formats.
6. After you set the time and date, press Ⓐ to return to the Timekeeping Mode (Timekeeping Display).

- The day of the week is automatically set in accordance with the date.
- The date can be set within the range of January 1, 1990 to December 31, 2029.
- If you do not operate any button for a few minutes while a selection is flashing, the flashing stops and the watch goes back to the Timekeeping Mode automatically.

DIGITAL COMPASS FUNCTIONS

This watch features a built-in bearing sensor that indicates any one of 16 directions. Up to five sets of direction readings can be stored into memory. Each set of data includes the direction, along with the date and time of the measurement. Direction readings can be performed in the Digital Compass Mode.

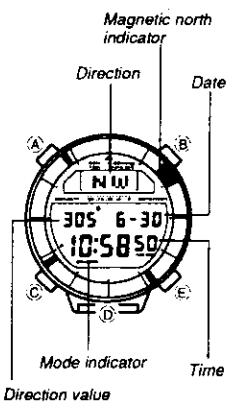
To enter and exit the Digital Compass Mode

1. While in the Timekeeping, Altimeter, or Data Recall Mode, press Ⓓ to enter the Digital Compass Mode.
- At this time, the watch immediately starts a Digital Compass operation. After about one second, the direction that the 12 o'clock position of the watch is pointing appears on the display.
- If you do not perform any button operation for a few minutes, the watch automatically returns to the mode you were in before entering the Digital Compass Mode.
- To illuminate the display while in the Digital Compass Mode, hold down Ⓑ.

2. Press Ⓒ to return to the mode you were in before entering the Digital Compass Mode.

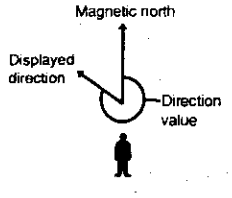
- Note that when you enter the digital Compass Mode from the Altimeter Mode, the Altimeter Mode measurement (see "About altitude measurements") continues to be performed internally.

To take a direction reading without storing data into memory

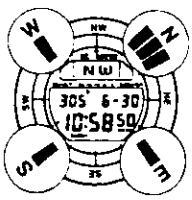


1. Place the watch on a flat surface or (if you are wearing the watch), make sure that your wrist is horizontal (in relation to the horizon).
- Note that taking a measurement while the watch is not horizontal (in relation to the horizon) can result in large measurement error.

2. Point the 12 o'clock position of the watch in the direction you want to measure.
3. Press Ⓓ to enter the Digital Compass Mode and to start a Digital Compass measurement operation.
- After about one second, the direction that the 12 o'clock position of the watch is pointing appears on the display.
- Also, four indicators appear to indicate magnetic north, south, east, and west.
- The direction value that appears on the display represents the clockwise angle formed between magnetic north (which is 0 degrees) and the displayed direction.
- You can repeat steps 1 through 3 as many times as you like.
- The following table shows the meanings of each of the direction abbreviations that appear on the display.

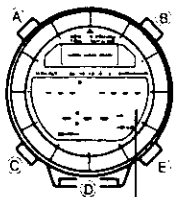


Direction	Meaning	Direction	Meaning	Direction	Meaning
N	North	SSW	South-southwest	ENE	East-northeast
E	East	WNW	West-northwest	SSE	South-southeast
S	South	NE	Northeast	WSW	West-southwest
W	West	SE	Southeast	NNW	North-northwest
NNE	North-northeast	SW	Southwest		
ESE	East-southeast	NW	Northwest		



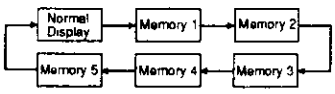
4. Next, you can adjust the rotary direction bezel so that the "N" or "▼" mark is aligned with the magnetic north indicator. This correctly aligns all of the markings on the bezel.
- The Digital Compass operation is automatically interrupted whenever an alarm (Daily Alarm or Hourly Time Signal) sounds. If this happens, start the Digital Compass operation again from the beginning.

To take a direction reading and store data into memory



Memory number (memory area display only)

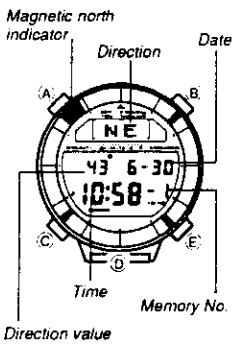
1. While in the Digital Compass Mode, use Ⓔ to select the memory area where you want to store the data. Each time you press Ⓔ, the selected memory area changes in the following sequence.



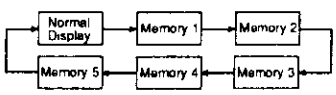
- Each memory area is identified by a number from 1 through 5. The Normal Display shows the current time and date without a memory number.
- If the memory area you select already contains data, that data appears on the display whenever the memory area is selected. Performing a Digital Compass operation replaces the existing data with the newly measured data.

2. Use the same procedures as described in steps 1 through 4 under "To take a direction reading without storing data into memory."

To recall data from memory



While in the Digital Compass Mode, use Ⓔ to scroll through the data in the following sequence.



To delete data

1. While in the Digital Compass Mode, scroll through the data items and display the one you want to delete.
2. Hold down Ⓐ until the displayed value change to "– – –".

- Holding down Ⓐ causes the message "CLR" to appear on the display, followed by the value changing to "– – –".

Digital Compass Precautions

This watch features a built-in magnetic bearing sensor that detects terrestrial magnetism. This means that the northern direction indicated by this watch is magnetic north, which is somewhat different from true polar north. The magnetic north pole is located in northern Canada, while the magnetic south pole is in south of Australia. Note that the difference between magnetic north and true north as measured with all magnetic compasses tends to be greater as one gets closer to either of the magnetic poles. You should also remember that some maps indicate true north (instead of magnetic north), and so you should make allowances when using such maps with this watch.

Location

- Using the Digital Compass when you are near a source of strong magnetism can cause large errors in readings. Because of this, you should avoid using the Digital Compass while in the vicinity of the following types of objects: permanent magnets (magnetic necklaces, etc.), concentrations of metal (metal doors, lockers, etc.), high tension wires, aerial wires, household appliances (TVs, personal computers, washing machines, freezers, etc.)
- Accurate direction measurements are impossible while in a train, boat, air plane, etc.
- Accurate measurements are also impossible indoors, especially inside ferroconcrete structures. This is because the metal framework of such structures picks up magnetism from appliances, etc.

Storage

- The precision of the compass may deteriorate if the watch becomes magnetized. Because of this, you should be sure to store the watch away from magnets or any other sources of strong magnetism, including: permanent magnets (magnetic necklaces, etc.) and household appliances (TVs, personal computers, washing machines, freezers, etc.)
- Whenever you suspect that the watch may have become magnetized, perform one of the calibration procedures under "Calibrating the Digital Compass".

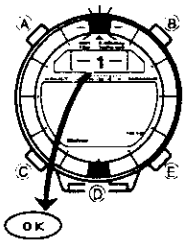
Calibrating the Digital Compass

Whenever you suspect that the readings produced by the Digital Compass are wrong, you should calibrate it. You can use either one of two calibration procedures: *bidirectional calibration* or *northerly calibration*.
You should use bidirectional calibration when you want to calibrate the Digital Compass to operate within an area exposed to magnetic force. This type of calibration should be used if the watch become magnetized for any reason.
With northerly calibration, you "teach" the watch which way is north (which you have to determine with another compass or some other means). You could use this calibration procedure, for example, to set the watch to indicate true north instead of magnetic north.

Important !

- If you want to perform both bidirectional and northerly calibration, be sure to perform bidirectional calibration first, and then perform northerly calibration. This is necessary because bidirectional calibration cancels any previously set northerly calibration setting.
- If you do not perform any button operation for two or three minutes while either calibration procedure is in progress (while the magnetic north indicator is flashing at the 12 or 6 o'clock position), the watch automatically returns to the Digital Compass Mode.
- The more correctly you perform bidirectional calibration, the better the accuracy of your Digital Compass readouts. You should perform bidirectional calibration whenever you change environments where you use the Digital Compass, and whenever you feel that the Digital Compass is producing incorrect readings.

To perform bidirectional calibration



1. While in the Digital Compass Mode (Normal Display), hold down Ⓐ until the upper display changes to show "–1–".
- At this time, the magnetic north indicator flashes at the 12 o'clock position to indicate that the watch is ready to calibrate the first direction.
2. Place the watch on a level surface, and press Ⓓ to calibrate the first direction.

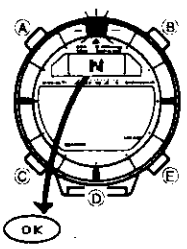
- When the calibration procedure is complete, the message "OK" appears in the upper display. This soon changes to "–2–" and the magnetic north indicator flashes at the 6 o'clock position to indicate that the watch is ready for the second direction.

3. Rotate the watch 180 degrees.
4. Press Ⓓ again to calibrate the second direction.
- When the calibration procedure is complete, the message "OK" appears in the upper display. After a short while, the watch automatically returns to the Digital Compass Mode.

Precautions about bidirectional calibration

- You can use any two opposing directions for bidirectional calibration. You must, however, make sure that they are 180 degrees opposite each other. Remember that if you perform the procedure incorrectly, you will get wrong readings from the Digital Compass.
- Do not move the watch during the one or two seconds (from the point you press Ⓓ up to the point that "OK" appears in the upper display) that the calibration of each direction is in progress. If you do, the message "ERR" appears in the upper display. When this happens, restart the bidirectional calibration procedure from the beginning.
- The appearance of "ERR" during bidirectional calibration can also be caused by local interference. If you suspect that this is the case, move to another location and try the procedure again.
- You should perform bidirectional calibration in an environment that is the same as that where you plan to be using the Digital Compass. If you plan to use it in an open field, for example, calibrate in an open field.

To perform northerly calibration



1. While in the Digital Compass Mode (Normal Display), hold down Ⓐ until the upper display changes to show "–1–".
2. Press Ⓒ to start the northerly calibration procedure.
- At this time, the indicator "N" appears in the upper display.
3. Place the watch on a level surface, and position it so that its 12 o'clock position points north (as measured with another compass).
4. Press Ⓓ to start the calibration operation.

- When the calibration procedure is complete, the message "OK" appears in the upper display. After a short while, the watch automatically returns to the Digital Compass Mode.

CHANGING THE MEASUREMENT UNITS

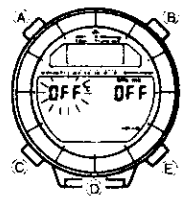
You can change the measured values displayed by the watch between the following units.

Altitude: meters (m) ↔ feet (ft)
Temperatures: Celsius (°C) ↔ Fahrenheit (°F)
Barometric Pressure:
hecto-pascals/millibars (hPa/mb) ↔ inchesHg (inHg)
Some countries call to this unit as hecto-pascal (hPa), while other countries call it millibars (mb). It really makes no difference, because 1 hPa = 1 mb. In this manual, we will refer to hPa/mb or hPa (mb).

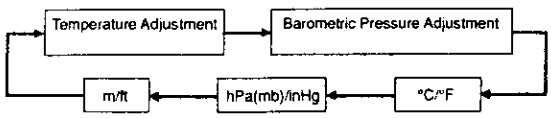
Important !

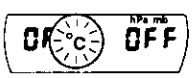
- Certain measurement functions are automatically terminated when you change the measurement units. Be sure that you perform this operation before starting actual measurements.
- Changing the altitude unit of measurement automatically switches off the altitude alarm, and sets the alarm's value to zero.
- Changing the atmospheric pressure unit of measurement automatically restarts the barometric pressure graph from a new value.
- Changing any of the units of measurement immediately starts to display newly measured data in the unit you specify. It also affects the unit of measurement for any data already stored in memory.

To change the measurement units



1. Use Ⓒ to enter the Timekeeping Mode.
2. Press Ⓔ until the barometric pressure/temperature display appears.
3. Hold down Ⓐ until "OFF" (or the temperature value) appears flashing in the display. The data on the display is flashing because it is *selected.*
4. Press Ⓒ to change the selection in the following sequence.





5. Use Ⓒ to select the unit (°C/°F, hPa (mb)/inHg or m/ft) you want.
6. Press Ⓑ or Ⓔ to set the currently selected unit.
7. After making your selection, press Ⓐ to return to the Timekeeping Mode (Barometric Pressure/ Temperature Display).

ALTIMETER FUNCTIONS

A built-in altimeter uses a pressure sensor to detect the current air pressure which is then used to estimate the current altitude in accordance with ISA (International Standard Atmosphere) values for altitude and air pressure. If you preset a reference altitude, the watch will also calculate the current relative altitude based on your preset value. Altimeter functions also include data storage memory and an altitude alarm.

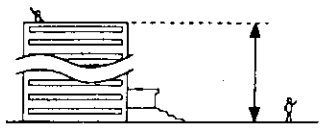
Important !

- This watch estimates altitude based on air pressure. This means that altitude readings for the same location may vary if air pressure changes.
- Sudden changes in the weather make it impossible to produce accurate altitude readings.
- This watch employs a semiconductor pressure sensor, which is affected by temperature changes. When taking altitude measurements, be sure to do so while ensuring that the watch is not exposed to temperature changes.
- Do not use this watch while participating in sports where there are sudden altitude changes. Also, do not use this watch for applications that demand professional or industrial level precision. This watch should not be used while engaging in the following activities: sky diving, hang gliding, paragliding, gyrocopter riding, glider riding, etc.

Applications

When no reference altitude is preset:
- The watch produces approximate altitude readings.

When a reference altitude is preset:
- Before beginning the climb, set the reference altitude to 0 m at the foot of the mountain. This makes it possible to determine the difference in altitude between the reference point and your destination.
- To determine the height of a tall building, set the reference altitude to 0 m on the ground floor. Note, however, that if the building is pressurized or air conditioned, you may not be able to get a good reading.



- To determine the difference in altitude between your house and the another location, set the reference altitude to 0 m at your house, and then check the reading when you arrive at the other location.

About altitude measurements

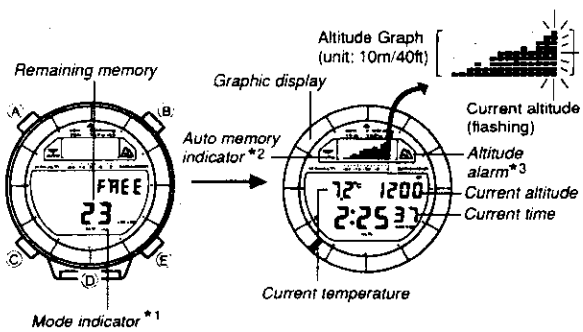
There are two types of altitude measurements: those for displayed data (Altimeter Mode measurements) and those for memory data (see "Memory measurements").

Altimeter mode measurement

This type of measurement is performed only when the watch is in the Altimeter Mode. As soon as you enter the Altimeter Mode, measurements are taken every five seconds for the first five minutes. After that, measurements are taken every two minutes. The display unit for Altimeter Mode measurements is 5 m (20 feet), and the measurement ranges is 0 to 4,000 m (0 to 13,120 feet).
- The measured altitude may be a negative value in cases where there is a reference altitude value set or because of certain atmospheric conditions.

Understanding the altimeter display

Use Ⓒ to enter the Altimeter Mode. Note that once you enter the Altimeter Mode, if you do not press any button for 10 or 11 hours, the watch automatically returns to the Timekeeping Mode.



*1 "ALTI" flashes while a measurement is being taken every five seconds. It does not flash during the measurements taken every two minutes.
*2 "AUTO" flashes on the display while a memory measurement is in progress. The indicator stops flashing while no measurement is being performed.
*3 "△" appears on the display when the altitude alarm is switched on.

Memory measurements

Memory measurements are taken independently of Altimeter Mode measurements and stored directly into memory (along with temperature measurements) for later recall. With memory measurement, the watch continuously performs measurements whenever the minutes in the Timekeeping Mode reach 00, 15, 30, or 45, until you switch memory measurements off. The watch continues to take measurements regardless of whether or not you change modes, so you can keep a running log of altitude and temperature changes automatically.

About the memory.....

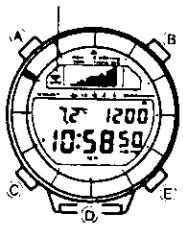
The memory item stored by the watch consists of the current altitude, plus the month, date, time, and temperature. Data is stored in the same sequence that it is input.
Memory can hold a total of 50 sets of data, which is enough to store 12 hours and 15 minutes of memory data. See "To recall altitude measurement data from memory" for details on how to recall memory data.

Important !

Further memory measurements become impossible whenever memory is full. The message "FULL" on the display indicates that memory is full. Always check the amount of memory remaining before starting memory measurements, and delete data if necessary.

To store altitude data into memory (memory measurement)

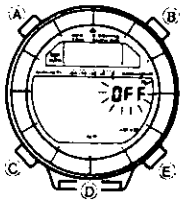
Auto memory indicator



1. In the Altimeter Mode, hold down Ⓔ until the watch emits a short beep, indicating the start of the measurement.
   - The data measured when you first start memory measurement is also stored into memory.
   - The "AUTO" indicator flashes on the display when you start memory measurements. The "AUTO" indicator continues to flash (indicating that measurements continue) even if you change modes.
   - Auto memory measurement cuts off automatically whenever there are 49 sets of data stored in memory. The 50th set of data measured when you stop the measurement operation in step 2 below is also stored in memory.
2. To stop measurements at any point, hold down Ⓔ again until the watch emits a short beep.
   - A final measurement is taken when you switch memory measurement off, and that data is also stored into memory. Such data is indicated by "FIN" during the recall operation.

Setting a Reference Altitude

After you set a reference altitude, the watch automatically calculates the difference between the current altitude and your preset value. The altitude measurements produced by this watch are subject to error caused by changes in atmospheric pressure. Because of this, we recommend that you set the reference altitude during your climb whenever one is available.



1. In the Altimeter Mode, hold down Ⓐ until the display clears. After 4 or 5 seconds, either "OFF" or the current reference altitude value (if set) will start to flash. The data flashes because it is *selected*.
   - The "OFF" indicator appears when the factory setting is being used for the calibration.
2. Press Ⓔ to increase the current reference altitude value by 5 m or Ⓑ to decrease it. Holding down either button changes the value at high speed.
   - If you have selected feet as your unit of measurement, the above operations change the reading in increments of 20 feet.
   - You can set the reference altitude within the range of –4,000 m to 4,000 m (–13,120 feet to 13,120 feet).
   - Pressing Ⓑ and Ⓔ at the same time returns to the "OFF" message.
3. After setting the reference altitude you want, press Ⓐ to return to the Altimeter Mode.

About the Altitude Alarm

The altitude alarm sounds for about five seconds whenever the current altitude matches a preset value. You can press any button to stop the alarm after it starts to sound.

Example

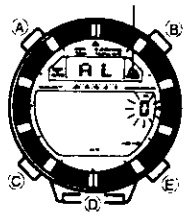
If you set the altitude alarm at 130 meters, it sounds when you pass the 130-meter mark on your way up and on your way back down.

To set the altitude alarm

1. In the Altimeter Mode, hold down Ⓐ until the display clears. After 4 or 5 seconds, either "OFF" or the current reference altitude value (if set) will start to flash. The data flashes because it is *selected*.
2. Press Ⓒ to change the selection in the following sequence.

Reference Altitude Setting ⟷ Altitude Alarm Setting

Altitude alarm indicator



3. Press Ⓒ to select the altitude alarm setting display (indicated by the "AL" indicator).
4. Press Ⓔ to increase the altitude alarm value by 5 m or Ⓑ to decrease it. Holding down either button changes the value at high speed.
   - If you have selected feet as your unit of measurement, the above operations change the setting in increments of 20 feet.
   - You can set the altitude alarm setting within the range of –4,000 m to 4,000 m (–13,120 feet to 13,120 feet).
   - Press Ⓑ and Ⓔ at the same time to change the setting to "0".
5. After setting the altitude alarm value, press Ⓐ to return to the Altimeter Mode.

To switch the altitude alarm on and off

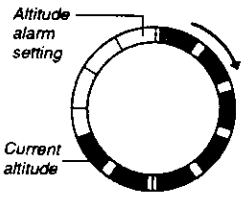
1. In the Altimeter Mode, hold down Ⓐ until the display clears. After 4 or 5 seconds, either "OFF" or the current reference altitude value (if set) will start to flash. The data flashes because it is *selected*.
2. Press Ⓓ to switch the altitude alarm on and off. The indicator AL is shown on the display while the altitude alarm is on.
3. After switching the altitude alarm on or off, press Ⓐ to return to the Altimeter Mode.
   - If the altitude alarm is on, the altitude alarm indicator remains on the display when you change to another mode.

About the graphic display

In the Altimeter Mode, the graphic display normally indicates the counting of the current time's seconds. When a memory measurement operation is being performed while the altitude alarm is on, however, the watch automatically divides the graphic display into 10 equal parts. Each part represents 1/10 of the difference between the first altitude measured by the memory measurement operation and the value you set as the altitude alarm. The graphic representation gives you some idea of how much farther you must go to reach the altitude indicated by the altitude alarm setting.

- The graphic representation described below is not shown on the display if the altitude alarm is switched off.

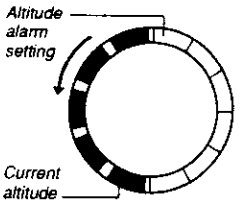
Example: When the initially measured altitude is less than the altitude alarm setting.



The graphic display would appear as illustrated here when your current altitude is 700 meters, after you set the altitude alarm for 1,000 meters and the initial measurement was 0 meters. Note that seven segments of the graph are darkened because you are 7/10 of the way to the value set for the altitude alarm.

- Segments in the graphic display darken as you approach the altitude alarm setting. If you descend away from the altitude alarm setting, the darkened segments are cleared from the graphic display.
- All 10 segments are darkened when you reach or exceed the altitude set for the altitude alarm.
- If your current altitude is lower than that registered for the initial measurement, none of the graphic display segments are darkened.

Example: When the initially measured altitude is greater than the altitude alarm setting.

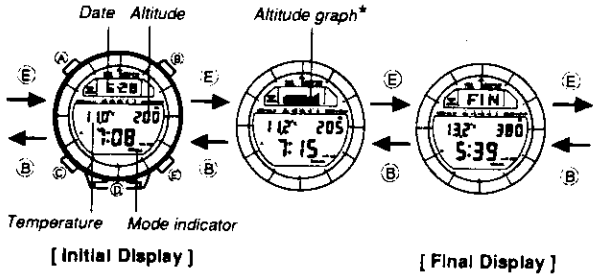


The graphic display would appear as illustrated here when your current altitude is 1500 meters, after you set the altitude alarm for 1000 meters and the initial measurement was 2000 meters. Note that five segments of the graph are darkened because you are 5/10 of the way to the value set for the altitude alarm.

- Segments in the graphic display darken as you approach the altitude alarm setting. If you ascend away from the altitude alarm setting, the darkened segments are cleared from the graphic display.
- All 10 segments are darkened when you reach or exceed the altitude set for the altitude alarm.
- If your current altitude is higher than that registered for the initial measurement, none of the graphic display segments are darkened.

To recall altitude measurement data from memory

1. Use Ⓒ to enter the Data Recall Mode.
2. Press Ⓔ to scroll forward through the stored data items or Ⓑ to scroll backward.
   - Holding down either button scrolls through the data items at high speed.
   - The data item that is displayed when you exit the Data Recall Mode is still displayed the next time you enter the Data Recall Mode.



* It shows nine segments between the maximum and minimum altitudes achieved during a memory measurement. The segments indicate how altitude changed during the measurement.

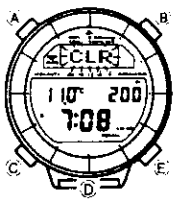
- The maximum and minimum altitudes achieved during a measurement operation are also stored in memory. When the maximum altitude is recalled, the message MAX alternates every second with the date in the upper display. The message MIN appears for the minimum altitude.
- Measured data is stored in memory even if an error occurs during the measurement. For details on errors, see "Warning Indicators".

To delete data from memory

The following procedure deletes an entire set (from start measurement to end measurement) of memory data.

Important !

You cannot delete data while an memory measurement is in progress ("AUTO" flashing on the display).



1. In the Recall Mode, display the initial data of the set of memory data you want to delete.
   - Display the maximum altitude or the minimum altitude if you want to delete it.
2. To clear the data, hold down Ⓐ until the watch emits a long beep (and until "CLR" stops flashing on the display).

BAROMETER FUNCTIONS

This watch uses a pressure sensor to measure atmospheric pressure. This sensor can be calibrated.

Important !

The barometer that is built into this watch measures changes in atmospheric pressure, which you can then apply to your own weather predictions. It is not intended for use as a precision instrument in official weather prediction or reporting applications.

Example barometer applications

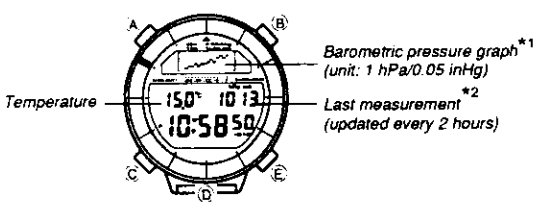
- Before going mountain climbing, you can take readings to find out the probable upcoming weather.
- You can predict the weather for golf or other outdoor activities.

About barometric measurements

The barometer automatically takes measurements every two hours (starting from midnight), regardless of what mode you are in. The last measurement result, along with the current temperature is displayed in the Timekeeping Mode.

Understanding the barometer display

1. Use Ⓒ to enter the Timekeeping Mode.
2. Press Ⓔ to display the Barometric Pressure/Temperature Display.



[Barometric Pressure/Temperature Display]

*1 The barometric pressure graph shows the barometric readings for the past 26 hours. The flashing point on the right of the display is the point for the last measurement.

*2 The display shows "– – – – hPa/mb" (or inHg) if a measured value falls outside the range of 610 hPa/mb to 1100 hPa/mb (18.00 inHg to 32.45 inHg). The normal display will return as soon as the pressure returns within the allowable range.

Using the barometric pressure graph

Changes in barometric pressure are caused by changes in the weather and temperature. The following shows how to interpret the data that appears on the barometric pressure graph.

A rising graph generally means better weather.

A falling graph generally means deteriorating weather.

Note that if there are sudden changes in weather or temperature, the graph line of past measurements may run off the top or bottom of the display. The entire graph will become visible once atmospheric conditions stabilize.

The following conditions cause the barometric pressure measurement to be skipped, with the corresponding point on the barometric pressure graph being left blank.

- Barometric reading that is out of range (610 hPa/mb to 1100 hPa/mb or 18.00 inHg to 32.45 inHg)
- Sensor malfunction
- Dead battery

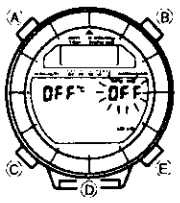
Calibrating the barometric pressure measurement

The sensor of this watch is calibrated at the factory before shipment and further adjustment is normally not required. If noticeable error is found in the barometric pressure readings produced by the watch, you can adjust it to correct the error.

Important !

Incorrectly calibrating the barometric pressure measurement of this watch can result in incorrect readings. Compare the readings produced by the watch with those of another reliable, accurate barometer.

To calibrate the barometric pressure



1. Display the barometric pressure and temperature in the Timekeeping Mode.
2. Hold down Ⓐ until the display clears. "OFF" or the temperature value should be flashing on the display.
3. Press Ⓒ to show the barometric pressure calibration display. At this time, "OFF" or the barometric pressure value should be flashing on the display.
   - The "OFF" indicator appears when the factory setting is being used for the calibration.
4. Each press of Ⓔ increases the displayed barometric pressure by 1 hPa/mb, while pressing Ⓑ decreases it. Holding down either button changes the value at high speed.
   - If you have selected inHg as your unit of measurement, the above operations change the reading by 0.05 inHg.
   - Pressing Ⓑ and Ⓔ at the same time returns to the "OFF" display.
5. After calibrating the barometric pressure, press Ⓐ to return to the Barometric Pressure/Temperature Display.
   - If you do not operate any button for a few minutes while the barometric pressure digits are flashing, the flashing stops and the watch goes back to the Barometric Pressure/Temperature Display.

THERMOMETER FUNCTIONS

A built-in temperature sensor measures temperature and shows the measured value on the display. The thermometer can be calibrated.

Important !

Temperature measurements are affected by your body temperature (while you are wearing the watch), direct sunlight, and moisture. To achieve a more accurate temperature measurement, remove the watch from your wrist, place it in a well ventilated location out of direct sunlight, and wipe off all moisture from the case. It takes approximately 20 to 30 minutes for the case of the watch to reach the actual surrounding temperature.

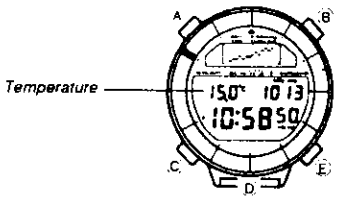
About temperature measurements

Temperature measurements are taken automatically every five minutes, regardless of what mode the watch is in. Measured temperature values can be viewed in the Timekeeping or Altimeter Modes. Temperature measurements are taken every five seconds for the first fives minutes after you display the Timekeeping Mode's barometric pressure/temperature display, or after you enter the Altimeter Mode. After that, temperature measurements are taken every five minutes.

- Temperature measurement data can be recalled along with altitude measurement data.

Understanding the temperature display

1. Use Ⓒ to enter the Timekeeping Mode.
2. Press Ⓔ to display the Barometric Pressure/Temperature Display.



- The display shows "– –. – °C" (or °F) if a measured value falls outside the range of –10°C to 60°C (14°F to 140°F). The normal display will return as soon as the temperature returns within the allowable range.
- For details on viewing the temperature in the Altimeter Mode, see "Understanding the altimeter display".

Calibrating the temperature measurement

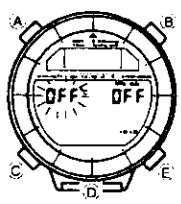
The temperature sensor of this watch is calibrated at the factory before shipment and further adjustment is normally not required. If noticeable error is found in the temperature readings produced by the watch, you can adjust it to correct the error.

Important !

Incorrectly calibrating the temperature measurement of this watch can result in incorrect readings. Carefully read the following before doing anything.

- Compare the readings produced by the watch with those of another reliable, accurate thermometer.
- If adjustment is required, remove the watch from your wrist and wait for 20 or 30 minutes to give the temperature of the watch time to stabilize.

To calibrate the temperature



1. Display the Barometric Pressure/ Temperature Display.
2. Hold down Ⓐ until the display clears. "OFF" or the temperature value should be flashing on the display.
- The "OFF" indicator appears when the factory setting is being used for the calibration.

3. Each press of Ⓔ increases the displayed temperature by 0.1°C while pressing Ⓑ decreases it. Holding down either button changes the value at high speed.

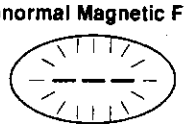
- Any time you calibrate the temperature, the message "TEMP ADJ" appears on the display. This messages remains on the display in any modes in which the temperature is displayed.
- If you have selected Fahrenheit as your unit of measurement, the above operations change the reading by 0.2°F.
- Pressing Ⓑ and Ⓔ at the same time returns to the "OFF" display.

4. After calibrating the temperature, press Ⓐ to return to the Barometric Pressure/Temperature Display.
- If you do not operate any button for a few minutes while the temperature digits are flashing, the flashing stops and the watch goes back to the Barometric Pressure/Temperature Display.

WARNING INDICATORS

Warning indicators appear whenever any of the conditions described below occur. Appearance of a warning indicator causes any measurement operation that is currently underway to stop. Warning indicators appear in the upper display, and this causes "– – –" to replace any directional, altitude, barometer, or temperature values on the display.

Abnormal Magnetic Field Indicator



This indicator appears whenever the Digital Compass has a problem obtaining a correct reading. This condition could indicate that the watch is within a very high magnetic field, and so you should try moving to another location. Also, see "Digital Compass Precautions" for further information on conditions that cause errors.

Low Battery Indicator

This message indicates battery power is too low to preform the measurement. It appears whenever battery power drops below a certain level, or when you try to use this watch under very cold conditions (below about –10°C/14°F).

If the BAT message appears because of use under cold conditions, it should clear (and normal operation should return) after the watch is brought back to normal temperature.

If battery power is low (indicated BAT appears under normal temperatures), you should have the batteries replaced as soon as possible. Note that replacement of the batteries causes all memory contents to be cleared.

Sensor Malfunction Indicator

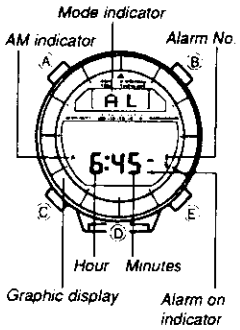
This message indicates malfunction of pressure sensor circuitry. Whenever a sensor malfunction initially occurs, the "ERR" messages flashes on the display and a buzzer sounds for three seconds. Note that calibrating the Digital Compass may cause the "ERR" message to appear. In this case, the message does not indicate sensor malfunction, and should be corrected if you re-calibrate the Digital Compass.

Important !

- If the sensor is malfunctioning when it comes time for an barometric pressure measurement to be taken, the barometric pressure value appears as "– – – –" on the display and the corresponding point on the barometric pressure graph is left blank.
- There may be cases where the "ERR" or "BAT" message is cleared once you change modes. In this case, you can continue using the watch normally unless the error warning message reappears.

Whenever there is a sensor malfunction, be sure to take the watch to an authorized CASIO distributor or Service Center as soon as possible.

ALARM FUNCTIONS



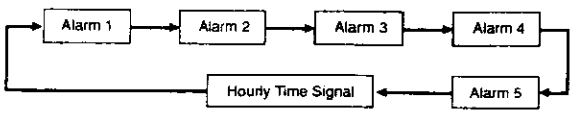
Five independent daily alarms can be set. Each alarm lets you set the hour and minutes. When the Daily Alarm is on, the alarm sounds for 20 seconds at the preset time each day. Press any button to stop the alarm after it starts to sound.

When the Hourly Time Signal is on, the watch beeps every hour on the hour.

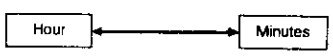
- The segments in the graphic display create a rotational movement effect while an alarm is sounding.

To set alarms

1. Use Ⓒ to enter the Alarm Mode.
- In the Alarm Mode, hold down Ⓑ to illuminate the display.
2. Press Ⓔ to select Alarm 1 through 5.



3. After you select an alarm, hold down Ⓐ until the hour digit flash on the display. The hour digits flash because they are *selected*.
- At this time, the alarm is automatically switched on.
4. Press Ⓒ to change the selection in the following sequence.



5. Press Ⓔ to increase the selected digits and Ⓑ to decrease them. Holding down either button changes the selection at high speed.
- The format (12-hour and 24-hour) of the alarm time matches the format you select for normal timekeeping.
- When setting the alarm time using the 12-hour format, take care to set the time correctly as morning (A) or afternoon (P).
6. After you set the alarm, press Ⓐ to return to the Alarm Mode.

To switch an alarm or the Hourly Time Signal on and off

1. In the Alarm Mode, press Ⓔ to select an alarm or the Hourly Time Signal.
2. When the alarm or Hourly Time Signal you want to is selected, press Ⓓ to switch it on and off.

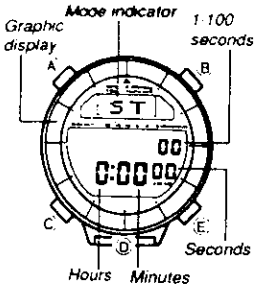
A Indicates alarm is ON
S Indicates Hourly Time Signal is ON

- If any alarm is on, the alarm on indicator (A S) is shown on the display when you change to another mode.

To test the alarm

Hold down Ⓔ while in the Alarm Mode to sound the alarm.

STOPWATCH FUNCTIONS



The Stopwatch Functions let you measure elapsed time, split times, and two finishes. The range of the stopwatch is 23 hours, 59 minutes, 59.99 seconds.
Stopwatch functions are available in the Stopwatch Mode, which you can enter using Ⓒ.

- In the Stopwatch Mode, the graphic display indicates the counting of seconds.

(a) Elapsed time measurement

Ⓔ Start → Ⓔ Stop → Ⓔ Re-start → Ⓔ Stop → Ⓑ Clear

(b) Split time measurement

Ⓔ Start → Ⓑ Split → Ⓑ Split release → Ⓔ Stop → Ⓑ Clear

(c) Split time and 1st-2nd place times

Ⓔ Start	Ⓑ Split	Ⓔ Stop	Ⓑ Split release	Ⓑ Clear
	First runner finishes.	Second runner finishes. Record time of first runner.	Record time of second runner.	

QUESTIONS & ANSWERS

Question: What causes incorrect direction readings?

Answer:

- Incorrect bidirectional calibration. Perform bidirectional calibration. Remember that bidirectional calibration is required whenever batteries are replaced.
- Nearby source of strong magnetism, such as a household appliance, a large steel bridge, a steel beam, overhead wires, etc., or an attempt to perform Digital Compass operation on a train, boat, etc. Move away from large metal objects and try again. Note that digital compass operation cannot be performed inside a train, boat, etc.

Question: What causes the Digital Compass to produce different readings at the same location?

Answer:

- Direction being measured is somewhere between two measurable directions (N and NNW, for example). The Digital Compass is designed to indicate any one of 16 different directions. If you move the 12 o'clock position slightly to the left or right (to move it off of the point between the two measurable directions), the Digital Compass should consistently produce the same reading.
- Magnetism generated by nearby high-tension wires are interfering with reception of terrestrial magnetism. Move away from the high-tension wires and try again.

Question: What does it mean when "– – –" appears in place of a direction?

Answer: This is the abnormal magnetic field indicator. It means that strong magnetism is being generated nearby. Move away from the source of strong magnetism and try again.

Question: Why am I having problems performing Digital Compass operations indoors?

Answer: TV, personal computer, speakers, or some other object is interfering with terrestrial magnetism. Move away from the object causing the interference or perform the Digital Compass operation outdoors. Indoor Digital Compass operations are particularly difficult inside ferroconcrete structures. Remember that you cannot perform Digital Compass operations inside of trains, airplanes, etc.

Question: How does the altimeter work?

Answer: Generally, atmospheric pressure and temperature decrease as altitude increases. This watch is equipped with pressure sensor and bases its altitude measurements on International Standard Atmosphere (ISA) values stipulated by the International Civil Aviation Organization (ICAO), which define relationships between altitude, atmospheric pressure, and temperature.

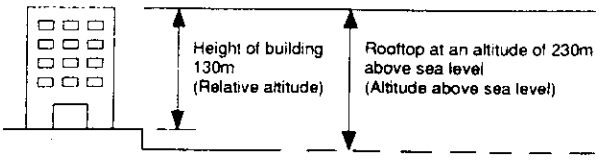
ALTITUDE	ATMOSPHERIC PRESSURE		TEMPERATURE	
4000 m	616 hPa/mb	About 8 hPa/mb per 100 m	−11°C	About 6.5°C per 100 m
3500 m				
3000 m	701 hPa/mb	About 9 hPa/mb per 100 m	−4.5°C	
2500 m				
2000 m	795 hPa/mb	About 10 hPa/mb per 100 m	2°C	
1500 m				
1000 m	899 hPa/mb	About 11 hPa/mb per 100 m	8.5°C	
500 m				
0 m	1013 hPa/mb	About 12 hPa/mb per 100 m	15°C	

Source: International Civil Aviation Organization

ALTITUDE	ATMOSPHERIC PRESSURE		TEMPERATURE	
14000 ft				About 3.6°F per 1000 ft
12000 ft	19.03 inHg	About 0.15 inHg per 200 ft	16.2°F	
10000 ft				
8000 ft	22.23 inHg	About 0.17 inHg per 200 ft	30.5°F	
6000 ft				
4000 ft	25.84 inHg	About 0.192 inHg per 200 ft	44.7°F	
2000 ft				
0 ft	29.92 inHg	About 0.21 inHg per 200 ft	59.0°F	

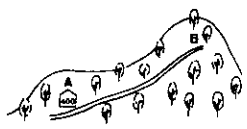
Source: International Civil Aviation Organization

There are two standard methods of expressing altitude: Absolute altitude and Relative altitude. Absolute altitude expresses an absolute height above sea level. Relative altitude expresses the difference between the height of two different places.



Example: To obtain readings that are close to absolute altitude.

When you are out hiking or mountain climbing, calibrate the altimeter using an altitude value from another source (a signpost or map, for example). Do this just before you start your altitude measurements.

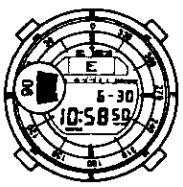


1. At Point **A**, calibrate the altimeter to 400 meters.
2. Proceed from Point **A** to Point **B**, taking altimeter measurements along the way.
- If you also have altitude data for Point **B**, you should again calibrate the altimeter there.

- Be sure to recalibrate at Point **B** if changing weather conditions produce altitude reading errors.
- The following conditions will prevent you from obtaining accurate readings:

Atmospheric pressure changes because of changes in the weather
Extreme temperature changes
Subjecting the watch to strong impact

Question: What do the numbers on the watch mean?



Answer: The face of this watch is marked with values that increase in a counterclockwise direction. These values represent degrees. When you take a direction reading, you can use these values to find out how many degrees the 12 o'clock position of this watch (which is the direction indicated in the digital display) differs from magnetic north. For example, when the Magnetic North Indicator is pointing at "90" on the watch's face, it means that the 12 o'clock position is 90 degrees from magnetic north (which means that the 12 o'clock pointing due east).

Question: How does the barometer work?

Answer: Barometric pressure indicates changes in the atmosphere, and by monitoring these changes you can predict the weather with reasonable accuracy. Rising atmospheric pressure indicates good weather, while falling pressure indicates deterioration weather conditions.
The atmospheric pressure that you see in the newspaper and on the TV weather report are measurements corrected to values measured at 0 m sea level.

Question: What should I do if I lose track of which mode I am in or lose my way when making settings?

Answer: Hold down the Ⓒ button for two or three seconds to return to the Timekeeping Mode. Next, try performing the operation you want again.